

AD-770 640

SELECTED MATERIAL FROM SOVIET
TECHNICAL LITERATURE, AUGUST 1973

Stuart G. Hibben

Informatics, Incorporated

Prepared for:

Air Force Office of Scientific Research
Advanced Research Projects Agency

15 October 1973

DISTRIBUTED BY:

NTIS

National Technical Information Service
U. S. DEPARTMENT OF COMMERCE
5285 Port Royal Road, Springfield Va. 22151

AD770 640

SELECTED MATERIAL
FROM
SOVIET TECHNICAL LITERATURE

August, 1973

Sponsored by
Advanced Research Projects Agency

ARPA Order No. 1622-4

October 15, 1973

ARPA Order No. 1622-4
Program Code No: 62701F3F10
Name of Contractor:
Informatics Inc.
Effective Date of Contract:
January 1, 1973
Contract Expiration Date:
December 31, 1973
Amount of Contract: \$343,363

Contract No. F44620-72-C-0053, P00001
Principal Investigator:
Stuart G. Hibben
Tel: (301) 770-3000 or
(301) 779-2850
Program Manager:
Klaus Liebhold
Tel: (301) 770-3000
Short Title of Work:
"Soviet Technical Selections"

This research was supported by the Advanced Research Projects Agency of the Department of Defense and was monitored by the Air Force Office of Scientific Research under Contract No. F44620-72-C-0053. The publication of this report does not constitute approval by any government organization or Informatics Inc. of the inferences, findings, and conclusions contained herein. It is published solely for the exchange and stimulation of ideas.

informatics inc

Systems and Services Company
6000 Executive Boulevard
Rockville, Maryland 20852
(301) 770-3000 Telex: 89 521

Approved for public release; distribution unlimited.

Reproduced by
NATIONAL TECHNICAL
INFORMATION SERVICE
U.S. Department of Commerce
Springfield, VA 22151

UNCLASSIFIED

SECURITY CLASSIFICATION OF THIS PAGE (When Data Entered)

REPORT DOCUMENTATION PAGE		READ INSTRUCTIONS BEFORE COMPLETING FORM
1. REPORT NUMBER AFOSR - TR - 73 - 2080	2. GOVT ACCESSION NO.	3. RECIPIENT'S CATALOG NUMBER
4. TITLE (and Subtitle) SELECTED MATERIAL FROM SOVIET TECHNICAL LITERATURE, AUGUST 1973		5. TYPE OF REPORT & PERIOD COVERED Scientific ... Interim
		6. PERFORMING ORG. REPORT NUMBER
7. AUTHOR(s) Stuart G. Hibben		8. CONTRACT OR GRANT NUMBER(s) F44620-72-C-0053, P00001
9. PERFORMING ORGANIZATION NAME AND ADDRESS Informatics Inc. 6000 Executive Boulevard Rockville, Maryland 20852		10. PROGRAM ELEMENT, PROJECT, TASK AREA & WORK UNIT NUMBERS 62701E3F10 AO 1622-4
11. CONTROLLING OFFICE NAME AND ADDRESS Advanced Research Projects Agency/NMR 1400 Wilson Boulevard Arlington, Virginia 22209		12. REPORT DATE October 15, 1973
		13. NUMBER OF PAGES 60
14. MONITORING AGENCY NAME & ADDRESS (if different from Controlling Office) Air Force Office of Scientific Research/NP 1400 Wilson Boulevard Arlington, Virginia 22209		15. SECURITY CLASS. (of this report) UNCLASSIFIED
		15a. DECLASSIFICATION/DOWNGRADING SCHEDULE
16. DISTRIBUTION STATEMENT (of this Report) Approved for public release; distribution unlimited		
17. DISTRIBUTION STATEMENT (of the abstract entered in Block 20, if different from Report)		
18. SUPPLEMENTARY NOTES		
19. KEY WORDS (Continue on reverse side if necessary and identify by block number) Laser Plasma, Laser damage, Explosion Effects, Seismology, Dense Electron Beams, High Temperature Effects, High Pressure Effects, Superconductivity, Bionics		
20. ABSTRACT (Continue on reverse side if necessary and identify by block number) This report includes bibliographic lists on contractual subjects that were completed in August, 1973. The major topics are: laser technology, effects of strong explosions, geosciences, particle beams, and material sciences. A section on bionics and one on items of miscellaneous interest are included as optional topics. Laser coverage is generally limited to high power effects; all current laser material is routinely entered in the quarterly laser bibliographies. An index identifying source abbreviations is appended.		

INTRODUCTION

This report includes bibliographic lists on contractual subjects that were completed in August, 1973. The major topics are: laser technology, effects of strong explosions, geosciences, particle beams, and material sciences. A section on bionics and one on items of miscellaneous interest are included as optional topics.

Laser coverage is generally limited to high power effects; all current laser material is routinely entered in the quarterly laser bibliographies.

An index identifying source abbreviations is appended.

TABLE OF CONTENTS

1. Laser Technology	
A. Recent Selections	1
2. Effects of Strong Explosions	
A. Recent Selections	4
3. Geosciences	
A. Recent Selections	12
4. Particle Beams	
A. Recent Selections	14
5. Material Sciences	
A. Recent Selections	18
6. Bionics	
A. Recent Selections	35
7. Miscellaneous Interest	
A. Recent Selections	47
8. List of Source Abbreviations	52

1. Laser Technology

A. Recent Selections

i. Beam Target Effects

Anisimov, S. I. Ob elektronnoy emissii metallov pod deystviyem pikosekundnykh lazernykh impulsov (Preprint). (Electron emission from metals due to picosecond laser pulses. Preprint). Chernogolovka, 1972, 16 p. (KL Dop vyp, 6/73, no. 12452)

Arifov, U. A., M. R. Bedilov, T. G. Tsoy, D. Kuramatov, and A. Ibragimov. Discharge, stimulated by laser plasma. DAN UzSSR, no. 10, 1972, 20-22. (RZhF, 5/73, no. 5G121)

Bel'skiy, A. M., and A. P. Khapalyuk. Reflection of a laser beam from the interface of isotropic dielectrics. OIS, v. 35, no. 1, 1973, 117-119.

Berkovits, V. L., A. I. Yekimov, and V. I. Safarov. Optical orientation in a system of electrons and lattice nuclei in semiconductors. Experiment. ZhETF, v. 65, no. 1, 1973, 346-361.

Buravl'ov, Yu. M., B. P. Nadezhda, and I. O. Novokhats'kiy. Some characteristics of the effect of laser radiation on metals. IN: Fiz. tverdogo tela. Res. mezhved. temat. nauchn. -tekhn. sb., no. 2, 1972, 87-90. (RZhF, 5/73, no. 5D1054)

Buzhinskiy, I. M., A. Ye. Pozdnyakov, and S. A. Ushakov. Dependence of the destruction threshold of F8 glass on irradiated surface diameter. OMP, no. 5, 1973, 69-70.

D'yakonov, M. I., and V. I. Perel'. Optical orientation in the system of electrons and lattice nuclei in semiconductors. Theory. ZhETF, v. 65, no. 1, 1973, 362-376.

Spitsyn, V. I., G. N. Pirogova, A. I. Ryabov, Ye. M. Shirshov, and P. Ya. Glazunov. Short-lived optical absorption in fused quartz. DAN SSSR, v. 211, no. 1, 1973, 155-157.

Zaretskiy, D. F., and V. V. Lomonosov. Diffraction of electrons in a strong field in dielectric crystals. ZhETF, v. 65, no. 1, 1973, 283-289.

ii. Beam Plasma Interaction

Afanas'yev, A. A., V. S. Burakov, and S. V. Nechayev. Resonance interaction of laser radiation with potassium plasma. DAN BSSR, v. 17, no. 8, 1973, 702-705.

Askar'yan, G. A., and N. M. Tarasova. Investigating passage of SHF radiation and current through a metallized film, evaporated by laser flare (pulse window for SHF). Generation and use of the steep fronts of SHF radiation. ZhETF P, v. 18, no. 1, 1973, 8-10.

Boyko, V. A., O. N. Krokhin, and G. V. Sklizkov. Issledovaniye parametrov i dinamiki lazernoy plazmy. (Investigating the parameters and dynamics of laser plasma). Moskva, 1972, 132 p. (KL Dop vyp, 6/73, no. 12462)

Chernyy, G. G., V. P. Korobeynikov, S. M. Gilinskiy, et al. Nekotoryye zadchi dvizheniya reagiruyushchikh gazov, svyazannyye s rasprostraneniym detonatsionnykh voln, organizatsiyey sverkhzvukovogo goreniya i lazernogo izlucheniya. (Problems of reacting gas motion associated with the propagation of detonation waves, produced by supersonic combustion and laser radiation). Moskva, 1972, 53 p. (KL Dop vyp, 6/73, no. 12524)

Dreyden, G. V., A. N. Zaydel', Yu. I. Ostrovskiy, and Ye. N. Shedova. Triple long-wave holographic diagnostics of an optical flare on a potassium target. ZhTF, no. 7, 1973, 1537-1542.

Kaliski, S. Conductivity-type laser heating of a nonhomogeneous plasma. Bull. Acad. pol. sci. Ser. sci. techn., v. 20, no. 12, 1972, 963-967. (RZhF, 5/73, no. 5G235)

Kaliski, S. Numerical analysis of average equations of laser concentrated plasma cumulation, taking into account nuclear fusion energy. IN: ibid., 3-9. (RZhF, 5/73, no. 5G233).

Kaliski, S. Average equations of deuterium-tritium plasma compression due to laser explosion with a heavy cloud ablation, taking nuclear fusion energy into account. Biul. WAT J. Dabrowskiego, v. 21, no. 12, 1972, 11-12. (RZhF, 5/73, no. 5G234)

Makhan'kov, V. G., and V. N. Tsytoich. Anomal'nyy nagrev plotnoy plazmy lazernym izlucheniym. (Anomalous heating of a dense plasma by laser radiation). Dubna, 1972, 33 p. (KL Dop vyp, 6/73, no. 12515)

Voronov, G. S., and L. Ye. Chernyshev. Variation in the ion structure of a scattering multiply-charged laser plasma. ZhTF, no. 7, 1973, 1484-1487.

2. Effects of Strong Explosions

A. Recent Selections

i. Shock Wave Effects

Gel'fand, B. Ye., S. A. Gubin, S. M. Kogarko, and V. N. Mironov. Combustion dynamics of gaseous-liquid fuel mixtures behind a weak shock wave front. IN: Sbornik. Goreniye i vzryv. Moskva, izd-vo Nauka, 1972, 494-497.

Gol'dfel'd, M. A., and V. N. Dolgov. Experimental study of turbulent boundary layer over a triangular plate with wedge. IAN SO SSSR, seriya tekhnicheskikh nauk, v 8, no. 2, 1973, 16-22.

Issledovaniye fiziko-khimicheskikh protsessov v udarnykh volnakh i nagretykh gazakh. Lektsii, prohit. v shkole molodykh uchenykh MGU 6-16 Apr. 1972 g. (Study of physico-chemical processes in shock waves and heated gases. Lectures given in the school of young scientists, MGU, April 6-16, 1972). Moskva, Izd-vo Mosk. un-ta, part 1, 1973, 165 p.

Karpov, V. P. Interaction of a flame front with a shock wave. IN: Sbornik. Goreniye i vzryv. Moskva, Izd-vo Nauka, 1972, 382-385.

Krymskiy, G. F., and I. A. Transkiy. Shock wave propagation in an interplanetary medium. Part 1. GiA, v. 13, no. 4, 1972, 574-579.

Mineyev, V. N., A. G. Ivanov, and Yu. N. Tyunyayev. Electric effects during shock compression of conducting materials. IN: Sbornik. Goreniye i vzryv. Moskva, Izd-vo Nauka, 1972, 597-601.

Novitskiy, Ye. Z., Ye. S. Tyunkin, V. N. Mineyev, and O. A. Kleshchevnikov. Studying shock wave effects and depolarization of TsTS-19 piezo-ceramics. IN: Sbornik. Gorenije i vzryv. Moskva, Izd-vo Nauka, 1972, 602-607.

Soloukhin, R. I. Shock waves in reacting gases. IN: Sbornik. Aerofiz. issledovaniya. Novosibirsk, 1972, 52-57. (RZhMekh, 6/73, no. 6B846)

Stikhanovskiy, B. N. Generation of electric current during impact on metallic and semiconducting bodies. IAN SO SSSR. Seriya tekhnicheskikh nauk, v. 8, no. 2, 1973, 60-65.

Strok, L. P., K. I. Krasikov, and N. K. Shaurova. Investigating the fine structure of 110G13L steel after high-speed deformation. IVUZ Fiz, no. 7, 1973, 72-77.

Tyunyayev, Yu. N., Yu. V. Lisitsyn, Ye. Z. Novitskiy, A. G. Ivanov, and V. N. Mineyev. Electrical conductivity of doped and γ -irradiated NaCl behind a shock wave front. IN: Sbornik. Gorenije i vzryv. Moskva, Izd-vo Nauka, 1972, 591-596.

Yakushev, V. V., S. S. Nabatov, and A. N. Dremin. High-frequency methods for measuring dielectric properties of condensed substances behind a shock wave front. IN: Sbornik. Gorenije i vzryv. Moskva, Izd-vo Nauka, 1972, 584-590.

Yakusheva, O. B., V. V. Yakushev, and A. N. Dremin. Formation of sulfur particles in sodium thiosulfate solutions behind a shock wave front. IN: Sbornik. Gorenije i vzryv. Moskva, Izd-vo Nauka, 1972, 544-548.

ii. Hypersonic Flow

Gilinskiy, S. M., and L. I. Zak. Hypersonic unsteady flow of gaseous fuel mixtures over different body shapes. IN: Sbornik. Goreniye i vzryv. Moskva, Izd-vo Nauka, 1972, 374-381.

Golovachev, Yu. P., A. M. Kuz'min, and F. D. Popov. Calculating supersonic flow over blunt bodies using complete and simplified Navier-Stokes equations. ZhVMMF, no. 4, 1973, 1021-1028.

Kosarev, V. I., and K. M. Magomedov. Divergent difference scheme for calculating supersonic steady-state flows of a complex structure. ZhVMMF, no. 4, 1973, 923-937.

Lipnitskiy, Yu. M., Yu. Ya. Mikhaylov, and K. G. Savinov. Investigating three-dimensional supersonic flow over the head of blunt bodies by method of adjustments. IN: Nauch. tr. In-t. mekh. Mosk. un-ta., no. 12, 1972, 66-79. (RZhMekh, 6/73, no. 6B272)

Maykapar, G. I. Aerodinamika giperzvukovykh skorostey. Konspekt lektsiy. (Aerodynamics of hypersonic velocities. Summary of lectures). Moskva, 1972, 148 p. (KL, 28/73, no. 21951)

Mitnitskiy, V. Ya. Calculating supersonic gas flow over the atmosphere of a spherical body. ZhVMMF, no. 4, 1973, 1060-1064.

Znamenskiy, V. V. Problem of supersonic inhomogeneous gas flow over a convex angle. IN: Tr. XVII Nauch. Konf. Mosk. fiz-tekhn. in-ta, 1971. Ser. Aerofiz. i prikl. mat. Dolgoprudnyy, 1972, 19-24. (RZhMekh, 7/73, no. 7B280)

iii. Soil Mechanics

Drukovanyy, M. F., V. G. Koylov, and I. A. Semenynk. Effect of the stressed condition of an elastic medium on crack developments in it during explosion of an explosive charge. IN: Sbornik. Issled. i rekomendatsii dlya rudnikov v obl. razrabotki rudn. mestorozhd. Novosibirsk, 1972, 69-75. (RZhMekh, 7/73, no. 7V626)

Grigoryan, S. S., and Ya. A. Pachepskiy. Chislennoye resheniye zadachi o sil'nom podzemnom vzryve. (Numerical solution to the problem of a powerful underground explosion). Moskva, 1972, 21 p. (KL Dop vyp, 6/73, no. 12569)

Kats, A. Z. Procedure of determining seismic micro-regions as applied to ground structures. IN: Tr. Koordinats. soveshch. po gidrotekhn., no. 80, 1973, 9-14. (RZhMekh, 7/73, no. 7V535)

Krasnikov, N. D., and G. S. Tolkachev. Studying vibrations of hydraulic structures made of sandy soil during explosive actions. IN: Tr. koordinats. soveshch. po gidrotekhn., no. 80, 1973, 25-30. (RZhMekh, 7/73, no. 7V532)

Kryzhanovskiy, A. L., and E. I. Vorontsov. Principles of water-saturated soil deformation. IN: Sb. nauch. tr. Perm. politekhn. in-t., no. 108, 1972, 38-42. (RZhMekh, 6/73, no. 6V533)

Neganov, V. P., and V. A. Skripka. Calculating main parameters of a contour explosion. IVUZ Gorn, no. 5, 1973, 77-83.

Nekrasov, V. V. Propagation of waves in inhomogeneous soils. IN: Tr. koordinats. soveshch. po gidrotekhn., no. 80, 1973, 124-129. (RZhMekh, 7/73, no. 7V536)

Nikiforov, S. V., V. V. Krapivnikov, A. I. Vasik, Yu. A. Ayzman, A. Ye. Frolov, and E. B. Likhтеров. Device for recording seismic oscillations. Authors certificate, USSR, no. 381049, January 20, 1971. (Otkr izobr, 21/73, p. 165)

Pergament, V. Kh., V. T. Ponomarev, E. A. Grigor'yants, B. V. Kozlovskiy, Yu. P. Mameshev, and P. I. Pevzner. Destruction of rocks. Gornyy zhurnal, no. 7, 1973, 58-62.

Podzemnyye krupnomasshtabnyye vzryvy. (Large-scale underground explosions). Izd-vo Nedra. (NK, 22/73, to be published late 1974)

Rapoport, M. B., Ye. N. Brago, Z. M. Malkin, et al. Device for treating multi-channel seismic data. Author's certificate, USSR, no. 381050, August 1, 1969. (Otkr izobr, 21/73, p. 165)

Rozin, G. I. -M., B. M. Kuperman, Yu. R. Daderko, and V. A. Belov. Drum for recording time dependent seismic profiles. Author's certificate, USSR, no. 379896, January 20, 1971. (Otkr izobr, 20/73, p. 138)

Shervud, L. Ya. A method for multi-channel recording of electrical signals from a group of seismic receivers. Author's certificate, USSR, no. 379895, January 4, 1970. (Otkr izobr, 20/73, p. 138)

iv. Equations of State

Fortov, V. Ye. Plotting the equation of state of condensed media, based on dynamic experiments. IN: Sbornik. Goreniye i vzryv. Moskva, Izd-vo Nauka, 1972, 561-564.

Krektuleva, R. A., and P. V. Makarov. Equations of state in collision problems. IN: Materialy 3-y Nauch. Konf. Tomsk un-ta po mat i mekh., no. 2, Tomsk, Tomsk. un-t, 1973, 132. (RZhMekh, 6/73, no. 6V965)

Stojanowski, J. Equations of state and equations for displacements in thermo-rheology. Zesz. nauk. P. Czest., no. 71, 1972, 97-105. (RZhMekh, 6/73, no. 6V507)

Zhdanov, V. A., V. F. Konusov, and V. V. Polyakov. Equations of state of a series of alkali-halide crystals. IN: Sbornik. Materialy 3-y Nauch. konf. Tomsk. un-ta po mat i mekh, no. 2, Tomsk, Tomsk. un-t, 1973, p. 129. (RZhMekh, 6/73, no. 6V952)

Zhdanov, V. A., V. F. Konusov, and N. A. Stakhin. Equations of state of sodium chloride crystals under conditions of uniaxial stress. IN: ibid., 130-131. (RZhMekh, 6/73, no. 6V953)

v. Miscellaneous Effects of Explosions

Belyayev, A. F., V. K. Bobolev, A. I. Korotkov, A. A. Sulimov, and S. V. Chuyko. Perekhod goreniya kondensirovannykh sistem vo vzryv. (Transition from combustion to explosion in condensed systems). Moskva, Izd-vo Nauka, 1973, 292 p. (RZhKh, 14/73, no. 14B1115K)

Bogdanov, A. P., A. S. Lazarev, O. V. Roman, and V. Ya. Furs. Compression of metallic powders by plane high-explosive charges. Report 1. Poroshkovaya metallurgiya, no. 7, 1973, 33-37.

Dremin, A. N., G. I. Kanel, and S. A. Koldunov. Investigating splitting off of water, ethyl alcohol and plexiglass. IN: Sbornik. Goreniye i vzryv. Moskva, Izd-vo Nauka, 1972, 569-574.

Gaynutdinov, R. Sh., R. Sh. Yenaleyev, and V. I. Averko-Antonovich. Investigating linear pyrolysis of materials by a powerful radiant energy beam. IN: Sbornik. Gorenije i vzryv. Moskva, Izd-vo Nauka, 1972, 120-123.

Gorst, A. G. Porokha i vzryvchatyye veshchestva. Izd. tret'ye, perer. (Powders and explosives. Third ed., Rev.). Moskva, Mashinostroyeniye, 1972, 207 p. (RBI, 3/73, no. 774)

Kestenboym, Kh. S., and G. S. Roslyakov. Studying problems of point explosion theory by an apparent difference method. ZhVMMF, no. 4, 1973, 1010-1020.

Lapshin, A. I., T. P. Lazarenko, V. P. Stupnikov, and S. S. Batsanov. Irreversible changes in the properties of phosphor crystals as a result of explosion. IN: Sbornik. Gorenije i vzryv. Moskva, Izd-vo Nauka, 1972, 533-539.

Mironov, P. S. Vzryvy i seysmobeзопасnost' sooruzheniy. (Explosions and earthquake-proofness of structures). Moskva, Izd-vo Nedra, 1973, 167 p. (RBL, 3/73, no. 888)

Selezneva, I. K. A spherically symmetrical optical discharge as an analog of diffusion combustion in gaseous fuel mixtures. IN: Gorenije i vzryv. Moskva, Izd-vo Nauka, 1972, 396-400.

Vil'gel'msson, G. O vzryvnykh neustoychivostyakh voln v plazme s uchetom dissipatsii i fazovykh effektov. (Explosive instability of plasma waves with allowance for dissipation and phase effects). Kiyev, 1972, 16 p. (KL Dop vyp, 6/73, no. 12468)

Yershov, A. P. Methods of measuring electrical conductivity behind a detonation front in condensed explosives. IN: Sbornik. Dinamika splosh. sredy., no. 11. Novosibirsk, 1972, 17-27. (RZhMekh, 6/73, no. 6V225)

Zakharenko, I. D., and V. I. Mali. Ductility of metals in explosion welding. IN: Sbornik. Gorenije i vzryv. Moskva, Izd-vo Nauka, 1972, 575-578.

3. Geosciences

A. Recent Selections

Andreyev, A. P., and N. Ya. Kunin. Deep seismic sounding and problems of isostasy. IN: AN SSSR. Izvestiya. Fizika Zemli, no. 8, 1973, 72-79.

Baranova, Ye. P. Results of deep seismic sounding on a profile along the Dnepr-Donets depression. Geofizicheskiy sbornik, no. 52, 1973, 24-31.

Bulin, N. K., et al. Seismological profile research in the southern part of the Baltic shield. Prikladnaya geofizika, no. 69, 1973, 69-81.

Kutas, V. V. Absorption of compressional waves at depths of 300 to 2800 km. Geofizicheskiy sbornik, no. 52, 1973, 42-48.

Kapitanova, S. A. Crustal structure in the Black Sea area, based on surface seismic wave data. IN: AN SSSR. Izvestiya. Fizika Zemli, no. 8, 1973, 80-88.

Levin, A. N. An approximate representation of seismic-wave rays and time-distance curves for discontinuous media in a case where velocity depends on two variables. Prikladnaya geofizika, no. 70, 1973, 65-73.

Lyakhovitskiy, F. M., and Ye. M. Chesnokov. Analysis of elastic anisotropy of models of the oceanic upper mantle. Moskovskiy universitet Vestnik. Geologiya, no. 3, 1973, 85-91.

Matveyeva, N. N., and G. V. Krasnopevtseva. Results of applying the optimization method to the interpretation of DSS data on Predkavkaz'ye. Prikladnaya geofizika, no. 69, 1973, 81-86.

Pavlenkova, N. I. Refracted wave interpretation by the reduced time-distance curve method. IN: AN SSSR. Izvestiya, Fizika Zemli, no. 8, 1973, 89-100.

Sibiriyakov, B. P. Study of direct waves excited by stresses smoothly distributed along a spherical surface. Geologiya i geofizika, no. 8, 1973, 93-101.

Unterreitmeier, E. The transmission of dynamic disturbances in seismograph systems (in English). Gerlands Beitrage zur Geophysik, v. 82, no. 3, 1973, 223-230.

Yegorkina, G. V. Nature of phase shifts in recording converted PS waves. Prikladnaya geofizika, no. 70, 1973, 74-84.

Yepinat'yeva, A. M., et al. Head waves from thick layers, based on field experiment data. Geofizicheskiy sbornik, no. 52, 1973, 11-23.

Monographs

Stelzner, J., D. Guth, and J. Weyrauch. Seismological Bulletin 1968 Station Moxa (MOX) (in English). Berlin, Akademie-Verlag, 1973, 281 p.

4. Particle Beams

A. Recent Selections

Alekseyev, Yu. A., M. N. Kazeyev, and V. V. Kisula. Numerical modeling of the plasma acceleration in a pulse accelerator with dielectric erosion. ZhTF, no. 7, 1973, 1454-1458.

Aref'yev, V. I. Linear theory of lateral current instability in plasma. ZhTF, no. 7, 1973, 1445-1453.

Altyn'tsev, A. T., B. N. Breizman, A. G. Eskov, et al. Collisionless relaxation of an ultrarelativistic electron beam in a plasma. Nucl. Fusion no. 12 (suppl.), 1972, 161-169. (RZhF, 3/73, no. 3G212)

Azizov, E. A., V. S. Komel'kov, and M. M. Stepanenko. Dual-stage acceleration of plasma. IN: Sbornik. Plazmen. uskoriteli. Moskva, Izd-vo Mashinostroyeniye, 1973, 195-198. (RZhElektr, 6/73, no. 6A335)

Babykin, M. V., Ye. K. Zavoisky, A. A. Ivanov, and L. I. Rudakov. Evaluating the possibilities of using a powerful relativistic electron beam for thermonuclear fusion. Nucl. Fusion., no. 12 (suppl.), 1972, 75-79. (RZhF, 3/73, no. 3G217)

Bakai, A. S., A. K. Berezin, G. P. Berezina, L. I. Bolotin, et al. Experimental research on non-linear effects in the interaction of non-relativistic and relativistic beams with a plasma. Nucl. Fusion, no. 12 (suppl.), 1972, 113-126. (RZhF, 3/73, no. 3G221)

Bogomaz, A. A., V. S. Borodin, A. I. Zaytsev, and F. G. Rutberg. Problems in the study of heavy-current discharge in a high pressure chamber. Part 2. ZhTF, no. 7, 1973, 1507-1512.

Borisov, D. G., and A. I. Gryzlov. Method of accelerating charged particles in a linear induction accelerator. Author's certificate, USSR, no. 341420, published July 5, 1969. (Otkr izobr, 29/73, p. 217)

Borisov, D. G., A. I. Gryzlov, E. I. Torgovanov, and Yu. V. Belov. Direct action pulse accelerator. Author's certificate, USSR, no. 303946, published March 18, 1970. (Otkr izobr, 29/73, p. 216)

Borisov, D. G., A. I. Gryzlov, Yu. V. Belov, E. I. Torgovanov, and A. G. Zvontsov. Pulsed power supply system for a linear electron accelerator. Author's certificate, USSR, no. 356980, published November 28, 1969. (Otkr izobr, 29/73, p. 216)

Bosamykin, V. S., and A. I. Pavlovskiy. A nanosecond voltage pulse generator. Author's certificate, USSR, no. 353370 published October 13, 1972. (RZhElektr, 6/73, no. 6A380 P)

Bugayev, S. P., G. M. Kassirov, B. M. Koval'chuk, and G. A. Mesyats. Generating intensive microsecond relativistic electron beams. ZhETF P, v. 18, no. 2, 1973, 82-85.

Datzeff, A. B., and D. G. Roussev. On the diffraction of dense electron beams in quantum mechanics. DBAN, v. 26, no. 5, 1973, 607-610.

Dmitriyenko, B. I., L. V. Leskov, V. V. Savichev, Ye. S. Trekhov, and Ye. D. Titov. Destruction of the electrodes of pulsed plasma accelerators. IN: Sbornik. Plazmen. uskoriteli. Moskva, Izd-vo Mashinostroyeniye, 1973, 225-228. (RZhElektr, 6/73, no. 6A349)

Erokhin, N. S., V. I. Kurilko, M. V. Levin, M. G. Lyubarsky, et al. Nonlinear theory of the interaction of relativistic and non-relativistic beams with a plasma. Non-linear theory of wave transformation. Nucl. Fusion., no. 12 (suppl.), 1972, 135-146. (RZhF, 3/73, no. 3G215)

Gaponov, V. A., A. I. Grishchenko, S. S. Zhukovskiy, and B. M. Korabel'nikov. Issledovaniye elektricheskoy prochnosti uskoritel'noy trubki s moshchnymi elektronnyimi puchkami (Investigating electrical stability of an accelerator tube by powerful electron beams). Novosibirsk, 1972, 17 p. (KL Dop vyp, 6/73, no. 12502)

Ginzburg, V. Ye., and V. N. Danilov. Formation of intense electron beams by electrostatic quadrupole lenses. RiE, no. 7, 1973, 1536-1538.

Gribkov, V. A., O. N. Krokhin, G. V. Sklizkov, N. V. Filippov, and T. I. Filippova. Beam heating in a "plasma focus". ZhETF P, v. 18, no. 1, 1973, 11-15.

Gubarev, V. Ya., N. P. Kozlov, L. V. Leskov, Yu. S. Protasov, and V. I. Khvesyuk. Experimental determination of high-speed characteristics of a pulsed erosion accelerator. IN: Sbornik. Plazmen. uskoriteli. Moskva, Izd-vo Mashinostroyeniye, 1973, 211-214. (RZhElektr, 6/73, no. 6A332)

Kvartskhava, I. F., N. G. Reshetnyak, and E. F. Khautiyev. Effect of electrode processes on the behavior of plasma in electrodynamic accelerators. IN: Sbornik. Plazmen. uskoriteli. Moskva, Izd-vo Mashinostroyeniye, 1973, 207-211. (RZhElektr, 6/73, no. 6A343)

Loladze, Ts. D., and M. Ya. El'-Ashri. The problem of parametric excitation of oscillations in an electron plasma. ZhTF, no. 7, 1973, 1412-1415.

Plyutto, A. A., K. S. Suladze and V. N. Ryzhakov. Ion acceleration in heavy-current electron beams. IN: Sbornik. Plazmen. uskoriteli. Moskva, Izd-vo Mashinostroyeniye, 1973, 47-53. (RZhMekh, 6/73, no. 6B89)

- Porotnikov, A. A. Stationary heavy-current plasma accelerators. IN: Sbornik. Plazmen. uskoriteli. Moskva, Izd-vo Mashinostroyeniye, 1973, 105-114. (RZhElektr, 6/73, no. 6A358)
- Prikhodov, V. Yu. Magnetic measurements in an axisymmetric heavy-current discharge. IN: Sbornik. Plazmen. uskoriteli. Moskva, Izd-vo Mashinostroyeniye, 1973, 139-141. (RZhElektr, 6/73, no. 6A304)
- Prudnikov, I. A., D. G. Borisov, A. I. Gryzlov, Yu. A. Svistunov, and Yu. F. Chichikalov. Device for generating charged particle bunches. Author's certificate, USSR, no. 343649, published December 21, 1970. (Otkr izobr, 29/73, p. 217)
- Roginskiy, L. A., and I. S. Mirer. Calculating parameters of intense charged particle beams by the excitation method. ZhTF, no. 7, 1973, 1394-1398.
- Shapiro, V. D. Nonlinear theory of the resonance interaction of particles and waves in a plasma. IN: Sbornik. Probl. teorii plazmy. Kiyev, 1972, 257-268. (RZhMekh, 7/73, no. 7B162)
- Vorob'yev, A. A., O. B. Yevdokimov, Ye. S. Kutukova, Z. M. Syritskaya, and I. P. Tubalov. Relaxation of space charge in glasses after irradiation by fast electrons. NM, v. 9, no. 7, 1973, 1237-1240.
- Zhileyko, G. I., L. M. Movsisyan, and V. V. Sindinskiy. Calculating phase and energetic parameters of stored-energy accelerators. ZhTF, no. 7, 1973, 1551-1553.
- Zolototrubov, I. M., Yu. M. Novikov, I. P. Skoblik, and A. G. Tolstolutskiy. Studying the operation of a coaxial accelerator in the regime of a dense and highly energetic plasma generation. IN: Sbornik. Plazmen. uskoriteli. Moskva, Izd-vo Mashinostroyeniye, 1973, 214-218. (RZhElektr, 6/73, no. 6A300)

5. Material Science

A. Recent Selections

i. Crack Propagation

Aleshin, V. I., S. K. Zakharov, and Ye. V. Kuvshinskiy. Hot brittleness of plexiglass. *Plasticheskiye massy*, no. 7, 1973, 59-60.

Artur, P., and U. Blekbern. Effects of the shape of plastic zone on its extension and crack opening. IN: *Sbornik. Novyye metody otsenki soprotivleniya met. khrupkomu razrusheniyu*. Moskva, Izd-vo Mir, 1972, 107-118. (RZhMekh, 6/73, no. 6V521)

Frankiewicz, K., and S. Stankowski. Crack propagation in a visco-elastic medium. *Zag. tarcia suzycia i smarow.*, no. 11, 1972, 113-128. (RZhMekh, 6/73, no. 6V520)

Getsov, L. B. Certain features of initiation and development of cracks in heat-resistant alloys under different types of loading. *Problemy prochnosti*, no. 7, 1973, 61-63.

Goldman, A. Ya., and K. A. Vylegzhanina. Effect of temperature-time factors on the kinetics of crack development and characteristics of destruction of some amorphous polymers. *F-KhMM*, no. 4, 1973, 69-75.

Kolgadin, V. A. Stresses and deformations in an orthogonally glass-reinforced plastic with cracks during biaxial tension. IN: *Sbornik. Ustoychivost' deformativn. elementov konstruktsiy iz kompozitsion. materialov*. Kiyev, Izd-vo Naukova dumka, 1972, 113-119. (RZhMekh, 7/73, no. 7V1042)

Kolgadin, V. A. Shearing strain in an orthogonally glass-reinforced plastic with cracks. IN: *ibid.*, 163-169. (RZhMekh, 7/73, no. 7V1043)

Mal'tsev, V. M. Stress concentration in a rubber-like specimen with a crack during biaxial tension. IN: *Sb. nauch. tr. Perm. politekh. in-t.*, no. 112, 1972, 43-46. (RZhMekh, 6/73, no. 6V998)

Martynov, V. G., B. A. Drozdovskiy, and M. A. Kramarov. Effect of the depth of an initial crack on the specific destruction work of structural steel. ZIL, no. 7, 1973, 849-852.

Romaniv, O. N., Yu. D. Petrina, and Yu. V. Zima. Critical opening of cracks and microstructure of structural steel fractures. F-KhMM, no. 4, 1973, 64-69.

Savruk, M. P., and A. P. Datsyshin. Limit equilibrium of a plate weakened by two randomly oriented cracks. PM, v. 9, no. 7, 1973, 49-56.

Yarema, S. Ya. Determining the stressed state of a disc, weakened by a system of cracks. F-KhMM, no. 4, 1973, 75-81.

ii. High Pressure Research

Buryak, V. P., A. A. Galkin, and G. A. Korneyeva. Effect of compression ratio on mechanical properties of copper. FMiM, v. 36, no. 1, 1973, 198-201.

Chebotareva, Ye. S., and S. G. Nuzhdina. Observing omega-titanium in a fine-crystalline diamond-base composite alloy. FMiM, v. 36, no. 1, 1973, 205-207.

- Gandel'man, G. M., O. Yu. Itskovich, P. S. Kondratenko, I. P. Perstnev, and V. M. Finkel'berg. High temperature electric resistance and superconductivity of potassium and rubidium at high pressures. ZhETF, v. 65, no. 1(7), 1973, 226-236.
- Gartman, V. K., and Ye. G. Ponyatovskiy. Indium-cadmium phase diagram at different pressures. ZhFKh, v. 47, no. 7, 1973, 1664-1666.
- Golovenko, V. S., Yu. G. Vazhentsev, V. Z. Midukov, and L. M. Sedokov. Ultimate strain of brittle materials at nonuniform hydrostatic compression. IN: Dokl. IV Nauch-tekhn. konf., Tekhn. progress v mashinostr. Tomsk, 1972, 59-61. (RZhMekh, 6/73, no. 6V935)
- Golovenko, V. S., and L. M. Sedokov. Strength characteristics of brittle materials at nonuniform hydrostatic compression. IN: ibid., 61-65. (RZhMekh, 6/73, no. 6V936)
- Grekov, N. A., and Ye. P. Silina. Fine structure of a chromium-nickel-manganese austenitic steel, strain hardened by explosion. IAN Met, no. 4, 1973, 174-178.
- Khachatryan, Yu. M. Characteristics of changing susceptibility of ferrites under high pressures. IAN B, no. 4, 1973, 85-89.
- Manzheliy, V. G., B. G. Udovidchenko, and V. B. Yesel'son. Possible phase transition in solid parahydrogen. ZhETF P, v. 18, no. 1, 1973, 30-32.
- Martynov, V. V., G. I. Savvakina, P. V. Titov, and L. G. Khandros. Effect of plane shock wave on martensite transformation in copper-aluminum-nickel alloys. FMiM, v. 36, no. 1, 1973, 180-183.

Tokiy, V. V., V. I. Zaytsev, and B. P. Filatov. Mechanism of formation of ordered dislocation structure in metals, deformed by a high hydrostatic pressure. UFZh, v. 18, no. 7, 1973, 1178-1181.

Zhuravlev, I. N., R. M. Manelis, I. A. Belousova, and V. Kh. Nurmukhamedov. Investigating lanthanum hexaboride, subjected to a high-temperature compression at high pressures. NM, v. 9, no. 7, 1973, 1162-1165.

iii. High Temperature Research

Aerodinamicheskoye nagrevaniye pri sverkhzvukovykh skorostyakh potoka. (Aerodynamic heating at supersonic flow velocities). Moskva, 1973, 72 p. (KL, 28/73, no. 21930)

Babadzhanov, P. B., and V. S. Getman. Ablation of large meteor particles. DAN Tadzh SSR, v. 15, no. 11, 1972, 19-22. (RZh Geofiz, 7/73, no. 7A95)

Bogachev, I. N., Yu. G. Veksler, and V. G. Sorokin. Effect of supersonic gas flow on the structure and heat resistance of metallic alloys. IAN Met, no. 4, 1973, 139-143.

Dauknis, V., et al. Issledovaniye termicheskoy stoykosti ognepurnoy keramiki. (Investigating heat resistance of refractory ceramics). Vil'nyus, Izd-vo Mintis, 1971, 150 p. (RBL, 2/73, no. 530)

Demchenko, N. S. Baking dispersed oxide compositions for high temperature protective coatings. Poroshkovaya Metallurgiya, no. 7 (127), 1973, 18-21.

Fialkov, A. S., N. M. Sidorov, B. N. Smirnov, and B. I.

Dyuzhikov. Characteristics of the structure and growth of pyro-carbon whiskers. DAN SSSR, v. 211, no. 1, 1973, 158-160.

Fomichev, Ye. N., N. P. Slyusar, A. D. Krivorotenko, and V. Ya.

Tolstaya. Investigating enthalpy of SrHfO_3 and SrZrO_3 at high temperatures. Ogneupory, no. 7, 1973, 36-37.

Frolova, K. I., and N. I. Timofeyeva. Investigating heat-resistance of the nickel-rare-earth element sesquioxide compositions. Zashchita metallov, v. 9, no. 4, 1973, 470-473.

Gerasimov, Ya. I., I. A. Vasil'yeva, and R. F. Balabayeva. Defect structure and thermodynamic properties of nonstoichiometric vanadium sesquioxide at high temperatures. DAN SSSR, v. 211, no. 1, 1973, 98-101.

Glazov, V. M., and A. S. Burkhanov. Temperature dependence pattern of solid and liquid copper chalcogenides at high temperatures. FTP, no. 7, 1973, 1401-1405.

Goncharov, Ye. P., A. G. Merzhanov, and A. S. Shteynberg. Thermal decomposition of condensed systems at elevated temperatures. IN: Sbornik. Goreniye i vzryv, Izd-vo Nauka, 1972, 765-770.

Gorelov, V. I., and O. V. Sorokin. Creep of metals and alloys under conditions of a complex stressed state. IN: Sbornik. Dinamika, prochnost kontroi' i upr. -70. Kuybyshev, 1972, 150-155. (RZhMekh, 6/73, no. 6V1037)

Goryushina, M. N. Investigating fracturing of heat-resistant perlite steel in a creep process. IN: Tr. TsNII tekhnol. mashinostr., no. 102, 1973, 261-270. (RZhMekh, 6/73, no. 6V1051)

- Kashcheyev, V. N. Ferromagnetizm pri vysokikh temperaturakh. (High temperature ferromagnetism.) Riga, Izd.-vo Zinatne, 1972, 162 p. (RBL, 2/73, no. 571)
- Kozlova, A. Ye., Ye. S. Lukin, and D. N. Poluboyarinov. Particle size effect on molding and sintering of a pure yttrium oxide. Ogneupory, no. 7, 1973, 22-26.
- Mardykin, I. P., and V. I. Kashin. Thermal properties of praseodymium in solid and liquid states. IAN Met, no. 4, 1973, 77-80.
- Markelov, N. V., V. I. Volga, and L. M. Buchnev. Thermodynamic functions of graphite single crystal in the 0-3000° K temperature range. ZhFKh, v. 47, no. 7, 1973, 1824-1827.
- Matskevich, T. L., T. V. Krachino, and Yu. N. Vil'k. Thermionic-emission properties of zirconium carbide-rhenium compositions. ZhTF, no. 7, 1973, 1554-1559.
- Mikhaylova, L. P., A. N. Antonov, Sh. V. Pichkhadze, and S. M. Soshina. Method of obtaining carbon fibers. Author's certificate, USSR, no. 389012, submitted June 14, 1971. (Otkr izobr, 29/72, p. 78).
- Nikolayeva, V. A., G. M. Kafarova, A. I. Rekov, Yu. I. Pugachev, B. N. Veretennikov, and Yu. P. Solodov. A method of obtaining tantalum carbide coatings. Author's certificate, USSR, no. 387047, submitted March 19, 1970. (Otkr izobr. 27/73, p. 83)
- Onishchenko, V. P., and Yu. P. Krasnyy. Thermodynamic properties of liquid sodium and potassium UFZh, v. 18, no. 7, 1973, 1194-1200.

Opara, B. K., M. N. Fokin, A. V. Vtulkin, G. A. Kravetskiy, V. S. Dergunova, A. S. Tarabanov, and A. P. Zaikina. Studying the effect of zirconium oxidation conditions on the structure and composition of scale. Zashchita metallov, v. 9, no. 4, 1973, 407-414.

Pimenov, G. A., N. V. Tikhomirov, V. I. Sharapov, and S. I. Koval'. Investigating properties of type EI415 steel in the range of forging temperatures. IN: Tr. TsNII tekhnol. mashinostr., no. 111, 1972, 51-55. (RZhMekh, 6/73, no. 6V1050)

Polezhayev, Yu. V., and V. V. Gorskiy. Heat- and mass-exchange on the surface of glassy material in a high-temperature gas flow. IN: Sbornik. Teplo- i massoperenoss, v. 9, part 2. Minsk, 1972, 261-266. (RZhMekh, 6/73, no. 6B756)

Prokoshkin, D. A., Ye. V. Vasil'yeva, V. I. Tret'yakov and I. N. Chizhov. Investigating heat resistance of Nb-Mo alloys with titanium and zirconium. IAN Met, no. 4, 1973, 230-235.

Rabota zhelezobetonnykh konstruktsiy pri vysokikh temperaturakh. (Functioning of reinforced concrete structures at high temperatures). Moskva, Stroyizdat, 1972, 148 p. (RBL, 3/73, no. 958)

Sal'nikov, K. Ya. Fiber kaolin composition: a high-temperature heat and sound insulating material. Ogneupory, no. 7, 1973, 54-55.

Samsonov, G. V., T. V. Dubovik, T. V. Andreyeva, G. I. Savvakina, and V. I. Baranov. Refractory material. Author's certificate, USSR, no. 348532, submitted September 12, 1972. (RZhKh, 13/73, no. 13M52 P)

Savelova, B. N., G. M. Savitskiy, and S. A. Gruzdev. Deriving a complete set of equations of viscoelastic anisotropic medium, taking into account fracture parameters. IN: Sbornik. Mekhanika Kratk. soderzh. dokl. kXXXI Nauch. Konf. LISI, 1973, Leningrad, 1973, 38-43. (RZhMekh, 7/73, no. 7V947)

Semenchenko, V. K., and I. T. Bodnar'. Investigating the refractive index of quartz in the α - β -transition region. Ois, v. 35, no. 1, 1973, 98-101.

Sorokin, O. V., and Yu. I. Likachev. Studying the effect of deformation rate on the flow curve shape of EI696 alloy at high temperatures. IN: Sbornik. Dinamika, prochnost', kontrol' i upr. -70. Kuybyshev, 1972, 201-208. (RZhMekh, 6/73, no. 6V1047)

Teplo-i massoperenos pri vysokikh temperaturakh. (Heat- and mass-transfer at high temperatures). Moskva, 1973, 134 p. (KL, 29/73, no. 23098).

Timoshchuk, L. T., B. A. Kardonov, N. I. Nistratov, and Ye. A. Kurganova. Effect of deformation rate and temperature on certain mechanical characteristics of Kh18Ni10T steel, EP-202 and EP-496 alloys. IN: Sbornik. Novyye metody ispyt. metallov. No. 1, Moskva, Izd-vo Metallurgiya, 1972, 135-139. (RZhMekh, 6/73, no. 6V1046)

Tsirlin, M. S., B. I. Krasilov, V. B. Vladimirov, and A. V. Byalobzheskiy. High-temperature oxidation of platinum. Zashchita metallov, v. 9, no. 4, 1973, 478-481.

Umanskiy, E. S., V. V. Kryuchkov, and S. S. Veremchuk.
Creep and recovery of composite films at elevated temperatures
Problemy prochnosti, no. 7, 1973, 111-115.

Vasil'yev, S. P. Using the method of photoelastic coatings for determining stresses and deformations in natural structures at an elevated temperature. IN: Tr. Novosib. in-ta inzh. zh.-d. transp., no. 137, 1972, 329-336. (RZhMekh, 6/73, no. 6V1171)

Viskanta, R., and Dzh. S. Toor. Experimental and theoretical study of the real surface effects on radiant heat-exchange. IN: Sbornik. Teplo-i massoperenos, v. 9, part 2. Minsk, 1972, 194-221. (RZhMekh, 6/73, no. 6B765)

Zharostoykiye pokrytiya (Soveshchaniye v Leningrade). [Heat-resistant coatings (Conference in Leningrad)]. VAN, no. 7, 1973, 85-87.

iv. Miscellaneous Material Properties

Adrova, N. A., V. N. Bagal, A. M. Dubnova, et al. Polyimides with benzoxazoles and benzimidazole rings in the fundamental chain. Vysokomolekulyarnyye soyedineniya, kratkiye soobshcheniya, no. 7, 1973, 509-510.

Adrova, N. A., M. I. Bessonov, M. M. Koton, et al. Synthesis and investigation of 10, 10-bis-(4-aminophenyl)-anthrone-base aromatic polyimides. IN: ibid., 510-511.

Adrova, N. A., M. M. Koton, L. A. Layus, et al. Synthesis and investigation of some polypyrronimides. IN: ibid., 512-514.

Arutyunyan, F. R., A. Kh. Mkhitarian, R. A. Oganessian, and B. O. Rostomyan. Surface wave excitation in an absorbing medium FTT, no. 7, 1973, 2184-2186.

Aslanova, M. S., V. I. Shelyubskiy, V. Ye. Khazanov, and L. G. Gerasimova. Effect of heat treatment on strength of quartz fiber. IN: Sbornik. Mekh. i teplovyye svoystva i stroyeniye neorgan. stekol., Moskva, 1972, 31-35. (RZhKh, 13/73, no. 13M165)

Belyakov, V. K., A. A. Kosobutskaya, I. V. Belyakova, M. V. Kozlova, and L. B. Sokolov. Thermal oxidative breakdown of aromatic polyamides and polyimides. Vysokomolekulyarnyye soyedineniya, no. 7, 1973, 1483-1494.

Chistyakov, I. G., and L. K. Vistin. Phase transitions in liquid crystals, induced by an electric field. Kristallografiya, no. 4, 1973, 873-875.

Fedotova, O. Ya., Ye. I. Nesterova, V. V. Korshak, and M. A. Il'yenko. Synthesis of linear and cross-linked polyimides based on diamines of the fluorene series. Vysokomolekulyarnyye soyedineniya, no. 7, 1973, 1502-1505.

Gribkova, P. N., T. N. Balykova, L. A. Glivka, P. M. Valetskiy, S. V. Vinogradova, and V. V. Korshak. Thermal breakdown of poly(1, 3, 4-oxadiazoles) containing carboran rings in the fundamental chain. Vysokomolekulyarnyye soyedineniya, no. 7, 1973, 1506-1512.

Inozemtseva, A. D., and L. S. Shabyshev. Using an optical analog method for determining liquid crystal structures. IVUZ Fiz, no. 7, 1973, 130-132.

Kapustina, O. A., and A. A. Talashev. Visualization of ultrasonic surface waves by means of liquid crystals. Akusticheskiy zhurnal, no. 4, 1973, 626-629.

- Kats, Ye. I. Behavior of nematic liquid crystals in a rotating magnetic field. ZhETF, v. 65, no. 1(7), 1973, 324-330.
- Kiseleva, T. M., M. M. Koton, N. P. Kuznetsov, Yu. N. Sazanov, and S. N. Nikolayeva. Synthesis of polyurea and polyurethanes, containing benzimidazol and imide rings in the main chain. Vysokomolekulyarnyye soyedineniya, kratkiye soobshcheniya, no. 7, 1973, 514-516.
- Krishtal, M. A., A. A. Zhukov, and A. N. Kokora. Struktura i svoystva splavov, obrabotannykh uzlucheniym lazera (Structure and characteristics of alloys treated with laser radiation). Moskva, Izd-vo metallurgiya, 1973, 191 p.
- Korshak, V. V., S. V. Vinogradova, L. A. Glivka, P. M. Valetskiy, and V. I. Stanko. Homogeneous and mixed poly(1, 3, 4- oxadiazoles) on the basis of 1, 2- and 1, 7- bis(4- carboxyphenyl)carborane. Vysokomolekulyarnyye soyedineniya, no. 7, 1973, 1495-1501.
- Koton, M. M., and Yu. N. Sazanov. Thermal degradation of poly (pyromellitimides). Vysokomolekulyarnyye soyedineniya, no. 7, 1973, 1654-1659.
- Kotov, V. A., A. N. Kriventsov, and V. S. Sedykh. Anisotropy in properties during compression of multilayered reinforced materials obtained by explosion welding. IN: Tr. Volgogr. politekhn. in-ta., no. 4, 1972, 222-228. (RZhMekh, 6/73, no. 6V987)
- Krasnov, Ye. P., V. P. Aksenova, A. A. Belyayev, A. V. Volokhina, et al. Thermal degradation of poly(benzimidazopyrrolones) and poly-(benzimidazophenanthrolines). Vysokomolekulyarnyye soyedineniya, no. 7, 1973, 1606-1614.

Kreshkov, A. P., E. A. Kirichenko, and A. D. Damayeva.
Synthesis and physicochemical properties of poly(phenylsiloxanes)
of the rare-earth elements. Vysokomolekulyarnyye soyedineniya,
Kratkiye soobshcheniya, no. 7, 1973, 551-554.

Morozov, A. V., V. G. Bessonov, and P. G. Shishkin. Using the
strength of glass fibers in glass-reinforced plastics. IN: Sbornik.
Ustoychivost' i deformativn. elementov konstruktsiy iz kompozitsion.
materialov, Kiyev, Izd-vo Naukova dumka, 1972, 143-146. (RZhMekh,
7/73, no. 7V1044)

Nemirovskaya, I. B., V. G. Berezkin, and B. M. Kovarskaya.
Rapid method of determining thermal stability of polymers.
Plasticheskiye massy, no. 7, 1973, 73-74.

Piskarev, V. I. SHF breakdown in n-InSb. IVUZ Radiofiz, no. 6,
1973, 957.

Rafikov, S. R., V. M. Nevskiy, E. A. Yatsenko, L. G. Grabarnik,
and V. G. Gutsalyuk. Coked cellular material from phenoformolites.
Plasticheskiye massy, no. 7, 1973, 53-55.

Reytlinger, S. A. Pronitsayemost' polimernykh materialov (Permeability
of polymers). Izd-vo Khimiya. (NK, 31/73, p. 46, to be published
late 1974)

Romashin, A. G., and Yu. Ye. Pivinskiy. Thermophysical and
mechanical properties of sintered quartz glass. IN: Sbornik. Mekh.
i teplovyye svoystva i stroyeniye neorgan. stekol. Moskva, 1972,
155-161. (RZhKh, 14/73, no. 14M119)

Sulimin, A. D., D. P. Shipilova, and O. I. Yakovlev. Spectroscopic study of the process of silicon dioxide film formation. IN: Sbornik. Spektroskopiya. Metody i primeneniya. Moskva, Izd-vo Nauka, 1973, 260-262. (RZhkh, 14/73, no. 14B1282)

Ul'yanov, A. I., A. V. Deryagin, and D. D. Mishin. Crystalline structure and magnetic properties of SmCo_5 powdered alloy. FMiM, no. 5, 1973, 1094-1095.

Vinogradova, S. V., V. V. Korshak, and D. R. Tur. Method of obtaining cardiac poly (1, 3, 4- oxadiazoles). Author's certificate, USSR, no. 389118, submitted July 23, 1971. (Otkr izobr, 29/73, p. 95)

Vinogradova, S. V., and Ya. S. Vygodskiy. Cardic polymers. Uspekhi khimii, v. 42, no. 7, 1973, 1225-1264.

Virgil'yev, Yu. S., Ye. V. Zelentsova, and Ye. I. Kurolenkin. Submicroporosity of carbon materials. NM, no. 7, 1973, 1264-1265.

Vorob'yev, G. A., P. Ye. Troyan, and Yu. B. Yankelevich. Investigating electron emission from an $\text{Al-Si}_3\text{N}_4\text{-Me}$ system. RiE, no. 7, 1973, 1533-1535.

Yakhkind, A. K., N. V. Ovcharenko, and G. T. Petrovskiy. Optical glass. Author's certificate, USSR, no. 358280, published January 31, 1973. (RZhKh, 14/73, no. 14M176 P)

Yermolenko, A. S., and A. V. Korolev. Characteristics of magnetic hysteresis in single crystals of RCo_5 compounds. FMiM, v. 36, no. 1, 1973, 52-59.

Zhurkov, S. N., and V. Ye. Korsukov. Atomic destruction mechanism of polymers under load. FTT, no. 7, 1973, 2071-2080.

Zurek, W., J. Gluza, and J. Miskiewicz. Properties of twisted fibers. Zesz. nauk. Plodz., no. 151, 1972, 27-56. (RZhMekh, 7/73, no. 7V1039)

v. Superconductivity

Alekseyevskiy, N. Ye., N. V. Ageyev, and V. F. Shamray. Effect of mechanical deformations on superconducting properties of Nb₃Al-Nb₃Ge alloy systems. DAN SSSR, v. 211, no. 2, 1973, 322-324.

Alekseyevskiy, N. Ye., and V. M. Zakosarenko. Superconductivity of cold-deposited films of germanium alloys with the platinum group elements. ZhETF P, v. 18, no. 2, 1973, 94-98.

Bartel', I., K-Kh. Bertel', K. Fisher, R. Gebel', et al. Superconductivity and electron structure of ultra pure niobium. Part 1. Obtaining ultra pure niobium. FMiM, v. 35, no. 5, 1973, 921-931.

Borovkov, O. V., I. Ya. Kucherov, and I. V. Ostrovskiy. Elastic wave propagation in a three-layered system. UFZh. no. 7, 1973, 1075-1080.

Drozhenko, V. G., V. I. Dudin, and N. N. Mikhaylov. Calibrating hysteresis losses in type II hard superconductors. FMiM, v. 36, no. 1, 1973, 191-192.

Galitskiy, V. M., V. F. Yelesin, and Yu. V. Kopayev. Possibility of high temperature superconductivity in nonequilibrium systems with repulsion. ZhETF P, v. 18, no. 1, 1973, 50-53.

Geylikman, B. T., et al. Kineticheskiye i nestatsionarnyye yavleniya v sverkhprovodnikakh. (Kinetic and nonstationary phenomena in superconductors). Moskva, Izd-vo Nauka, 1972, 176 p. (RBL, 2/73, no. 362).

Geylikman, B. T., and V. G. Orlov. Electronic heat conduction of superconductors. FTT, no. 7, 1973, 2104-2109.

Gor'kov, L. P., and N. B. Kopnin. Viscous vortex flows in type II superconducting alloys. ZhETF, v. 65, no. 1, 1973, 396-410.

Izyumov, Yu. A., and V. N. Syromyatnikov. Effect of impurities on the temperature of superconducting transition in V_3Si type compounds. FMiM, v. 35, no. 5, 1973, 899-909.

Khidekel', M. L., and E. B. Yagubskiy. Problema vysokotemperaturnoy sverkhprovodimosti: sinteticheskiye aspekty (Preprint). (The problem of high temperature superconductivity: synthetic aspects. (Preprint)). Chernogolovka, 1973, 44 p. (KL Dop vyp, 6/73, no. 12562)

Osipov, K. A., A. F. Orlov, T. L. Borovich, A. K. Milay, and L. S. Sobiyeva. Superconductivity in films of niobium-aluminum oxide mixtures. FMiM, v. 35, no. 5, 1973, 1174-1178.

Osipova, S. G., G. I. Pozharskaya, V. I. Pryadein, A. K. Shtol'ts, A. P. Stepanov, A. F. Prekul, and P. V. Gel'd. Magnetic properties of $V_3(Si_{1-x}Ge_x)$ solid solutions. FMiM, v. 35, no. 5, 1973, 968-972.

Otschik, P. Stability of oxide barriers in Josephson tunnel junctions. Phys. stat. sol. (a), v. 18, no. 1, 1973, K45-K48.

Pashitskiy, E. A., and A. M. Gabovich. Softening of metals during superconducting transition. FMiM, v. 36, no. 1, 1973, 186-187.

Seifarth, H., and W. Rentsch. $V-V_{x-y}O-Pb$ Josephson tunnel junction of high stability. Phys. stat. sol. (a). v. 18, no. 1, 1973, 135-146.

Sirota, N. N., and A. K. Fedotov. Electric conductivity and superconductivity of vanadium-niobium-chromium solid solutions. DAN BSSR, no. 7, 1973, 613-616.

Vasil'yev, B. V., V. G. Grebinnik, and V. G. Simkin. Chuvstvitel'nyy sverkhprovodyashchiy kvantovyy magnitometer. (Sensitive superconducting quantum magnetometer). Dubna, 1973, 10 p. (KL, 28/73, no. 22138)

Yeru, I. I., S. A. Peskovatskiy, and A. V. Poladich. Relaxation oscillations of transfer current in superconducting thin films. FTT, no. 7, 1973, 2228-2230.

vi. Epitaxial Films

Pchelyakov, O. P., R. N. Lovyagin, A. I. Toropov, and S. I. Stenin. Silicon homoepitaxy with ion sputtering. Part 2. Formation of defects. Phys. stat. sol.(a), v. 17, 1973, 547-553.

Tolomasov, V. A., L. N. Abrosimova, T. N. Sergiyevskaya, and T. M. Zotova. Phosphorus and arsenic silicon doping of epitaxial layers in vacuum. Kristallografiya, no. 4, 1973, 882-884.

Val'kov, I. G., V. S. Bondarenko, N. G. Ryabtsev, N. I. Kochnev, A. N. Palagushkin, and B. N. Sharonov. Crystallization kinetics of piezoelectric ZnO films on an oriented α -corundum substrate. NM, no. 7, 1973, 1195-1198.

Yezhovskiy, Yu. K., I. P. Kalinkin, K. K. Muravyeva and V. B. Aleskovskiy. Synthesis of CdTe epitaxial films. NM, no. 7, 1973, 1115-1120.

vii. Magnetic Bubble Materials

Belov, K. P., A. K. Gapeyev, A. M. Kadomtseva, et al. Characteristics of spin reorientation in yttrium orthoferrite during small substitutions of cobalt ions for iron ions. FTT, no. 7, 1937, 2244-

Benidze, O. M., and A. V. Zalesskiy. Domain structure of a large yttrium orthoferrite single crystal. FTT, no. 7, 1973, 2207-2209.

6. Bionics

A. Recent Selections

Agarkov, G. B., V. V. Babeno and Z. I. Ferenets. Innervation of the dolphin skin and muscles, and the hypothesis of flow stabilization in the boundary layer. Problemy bioniki, Moscow, Nauka, 1973, 478-483.

Alekseyeva, K. D. On the method of measuring energy expenditure during marine fish locomotion. Problemy bioniki, Moscow, Nauka, 1973, 447-451.

Ayrapet'yants, E. Sh., A. I. Konstantinov and D. P. Matyushkin. Contributions to the theory of echo location in bats. Problemy bioniki, Moscow, Nauka, 1973, 125-135.

Belyakov, R. V. Generators of undamped mechanochemical oscillations based on contracting muscle-like films. Problemy bioniki, Moscow, Nauka, 1973, 451-464.

Bereznaya, I. Ya., and O. Yu. Vorob'yev. Estimates of information losses in processing binary sequences in a neuron with memory. Problemy bioniki, Moscow, Nauka, 1973, 260-263.

Bochek, M., and M. Tkhoma (Czechoslovakia). Certain logical properties of adaptive threshold linear elements. Problemy bioniki, Moscow, Nauka, 1973, 247-255.

Bogoslovskaya, L. S., M. G. Gaaze-Rapoport, G. P. Zhukova, and Ye. G. Shkol'nik-Yarros. On some specific features of CNS structures capable of ensuring both their generality and specialization. Problemy bioniki, Moscow, Nauka, 1973, 287-299.

Bondar, A. A., L. A. Dedosha, A. M. Reznik and A. F. Stepanenkov. A plastic model of a neuron with multiple inputs. Problemy bioniki, Moscow, Nauka, 1973, 256-259.

Bondarenko, M. F., and Ye. A. Solov'yeva. Methods of problem solving in morphological and submorphological classification of parts of speech; a mathematical approach. Problemy bioniki, Khar'kov, no. 10, 1973, 145-149.

Borodulina, T. L. The role of bone juncture surfaces in the locomotion of the avian wing apex. Problemy bioniki, Moscow, Nauka, 1973, 488-493.

Bortnyuk, Yu. A., I. I. Grabovskiy and I. B. Gutchin. Experimental investigations into the synthesis of formal neurons. Problemy bioniki, Moscow, Nauka, 1973, 213-220.

Braynes, A. S., and L. V. Konovalikhina. Certain bionic aspects of stimulation. Problemy bioniki, Moscow, Nauka, 1973, 348-350.

Braynes, S. N., and V. L. Brailovskiy. Study of complex biological systems by automatic classification methods. Problemy bioniki, Moscow, Nauka, 1973, 17-22.

Braynes, S. N., and A. I. Suslov. A neurobiological model of information processing and storage. Problemy bioniki, Moscow, Nauka, 1973, 343-347.

Bugay, Yu. P., V. A. Bakhtigozin and V. G. Chervov. An optical electron model of local detectors of the visual analyzer. Problemy bioniki, Khar'kov, no. 10, 1973, 120-124.

Bugay, Yu. P., V. G. Chernov, Yu. I. Nefedov, Yu. I. Zozulya. On one method of analysis and synthesis of neuron-like elements and systems. Problemy bioniki, Moscow, Nauka, 1973, 243-247.

Buslovskiy, O. Ye., V. K. Labutin, A. P. Molchanov, and Ya. I. Panova. A model of an electric sensor with frequency-dependent parameters based on functioning of the cochlea. Problemy bioniki, Moscow, Nauka, 1973, 104-111.

Chudakov, V. N. The algebraic nature of the structure of stages of formative thinking. Problemy bioniki, Khar'kov, no. 10, 1973, 49-57.

Chudakov, V. N. Correlation among the isomorphic structures of thinking at neuronal and psychological levels; a mathematical approach. Problemy bioniki, Khar'kov, no. 10, 1973, 66-73.

Dam'yanovich, Z. Modelling of neural activity. Problemy bioniki, Moscow, Nauka, 1973, 315-320.

Didichenko, N. P. A method of determining the parameters of a linear learning model. Problemy bioniki, Khar'kov, no. 10, 1973, 135-137.

Dobrachev, Yu. P., and G. N. Simkin. Mathematical presentation of certain characteristics of echolocating sound signals in bats off the Vespertilionidae family; analysis of reflected impulses. Problemy bioniki, Moscow, Nauka, 1973, 155-162.

Drishel', G., and V. Kirmse. Compensation of distance-dependent changes in the size of images in the retina during visual perception processes. Problemy bioniki, Moscow, Nauka, 1973, 35-39.

Dzerzhinskiy, F. Ya. Mechanical and kinetic features of the avian maxillary organ. Problemy bioniki, Moscow, Nauka, 1973, 493-498.

Gaaze-Rapoport, M. G., D. A. Pospelov, and Ye. T. Semenova. On one model of the collective behavior of automata. Problemy bioniki, Moscow, Nauka, 1973, 367-374.

Gazenko, O. G., and N. A. Chekhonadskiy. Specific features of mathematical modelling of the vestibular analyzer center. Problemy bioniki, Moscow, Nauka, 1973, 45-53.

- Gerke, V. Increasing the reliability of information processing by redundancy checks. Problemy bioniki, Moscow, Nauka, 1973, 230-238.
- Gidikov, A., L. Mitrani, D. Kozarov, and N. Tankov. Interaction of antagonistic muscles during the microstructure formation of locomotor reactions. Problemy bioniki, Moscow, Nauka, 1973, 510-515.
- Gidikov, A. A., M. P. Marinov and I. V. Guevski. Bionic aspects of a problem in the optimal control of high-speed actions. Problemy bioniki, Moscow, Nauka, 1973, 402-413.
- Granovskaya, R. M. A neural model of long-term memory. Problemy bioniki, Moscow, Nauka, 1973, 264-271.
- Gulyayev, P. I., V. I. Zabotin and N. Ya. Shlippenbakh. Electromagnetic fields formed during the locomotion of insects, birds and animals, and their bionic interpretation. Problemy bioniki, Moscow, Nauka, 1973, 188-192.
- Gumetskiy, R. Ya., M. F. Derkach, L. N. Mishin and M. Ye. Chaban. Recognition of spoken vowels in a model by using invariant spectral features of the phonemes. Problemy bioniki, Moscow, Nauka, 1973, 65-69.
- Il'ichev, V. D., T. B. Golubeva, B. G. Kravtsov, and A. G. Chernyy. Electrophysiological characteristics of receptors of bat and owl auditory analyzers with respect to their orientation and hearing. Problemy bioniki, Moscow, Nauka, 1973, 169-181.
- Ilyunin, O. K., V. V. Spiridov and I. P. Pliss. Optimization of methodology for processing heuristic data. Problemy bioniki, Khar'kov, no. 10, 1973, 137-139.

Kalinina, T. Ye., and S. Ya. Vyshkind. A logical model of certain aspects of the brain analyzer structure. Problemy bioniki, Moscow, Nauka, 1973, 29-35.

Karev, A. V., L. S. Il'inskaya and A. P. Il'inskiy. Certain methods of programming intellectual activity, and the problem of hypnosis. Problemy bioniki, Khar'kov, no. 10, 1973, 139-144.

Khvedelidze, M. A., S. I. Dumbadze, M. Sh. Lomsadze, N. A. Datebashvili, V. T. Zhorzholiani and M. A. Sokolova. Bionic aspects of magnetoelectric effects. Problemy bioniki, Moscow, Nauka, 1973, 196-201.

Karvelis, D. I., N. V. Pozin and S. V. Polyanskiy. A neural network model capable of identifying sets of analog quantities. Problemy bioniki, Moscow, Nauka, 1973, 272-275.

Kogan, A. B., L. D. Karpenko and O. G. Chorayan. Evolutionary approach to the formation of homeostatic systems of neural ensembles. Problemy bioniki, Moscow, Nauka, 1973, 280-287.

Konstantinov, A. I., and B. V. Sokolov. Echolocation of insects and sound perception in bats; an analysis of their role and interaction. Problemy bioniki, Moscow, Nauka, 1973, 162-169.

Kuchina, Ye. V. Experimental investigations into the formation of search algorithms in monkeys. Problemy bioniki, Moscow, Nauka, 1973, 394-397.

Kulin, Ye. T., S. I. Demidova, and V. B. Kasimenko. On the problem of selective receptor of r-f electromagnetic oscillations in living cells. Problemy bioniki, Moscow, Nauka, 1973, 192-195.

- Kyunnap, E. Yu. The vocal tract; its analysis and control. Problemy bioniki, Moscow, Nauka, 1973, 76-98.
- Lovitskiy, V. A. Modelling of the verbal memory system. Problemy bioniki, Moscow, Nauka, 1973, 351-354.
- Lyubinskiy, I. A., V. A. Milyutina and V. P. Yakhno. Analysing the quality of stimulation from its peak in one particular neural layer with direct lateral connections. Problemy bioniki, Moscow, Nauka, 1973, 300-309.
- Maneshin, V. S. Satisfaction of needs and its relation to psychic activity in living beings. Problemy bioniki, Khar'kov, no. 10, 1973, 89-93.
- Manziy, S. F., and A. G. Berezkin. The role of synovial fluid in the reliability of joints. Problemy bioniki, Moscow, Nauka, 1973, 498-502.
- Matyushkin, D. P. Electric responses of the bat acoustic nerve to ultrasound of different pitch and intensities. Problemy bioniki, Moscow, Nauka, 1973, 112-115.
- Matyushkin, D. P., and L. M. Kotelenko. Auditory neurons of the bat cortex and the nature of their responses to sound stimulations. Problemy bioniki, Moscow, Nauka, 1973, 116-119.
- Mikhaylovskiy, V. N., N. N. Krasnogorskiy, K. S. Voychishin, L. I. Grabar and V. N. Zhegar'. Human perception of weak magnetic field oscillations. Problemy bioniki, Moscow, Nauka, 1973, 202-205.
- Morozova, A. L. Effect of muscular load on certain elements in the carbohydrate-phosphorus metabolism in Black Sea mackerel tissues. Problemy bioniki, Moscow, Nauka, 1973, 444-447.

- Naumov, N. P. Bionics and environmental systems. Problemy bioniki, Moscow, Nauka, 1973, 7-14.
- Naumov, N. P., and G. N. Simkin. A comparative evaluation of echo location and sound orientation in bats. Problemy bioniki, Moscow, Nauka, 1973, 136-146.
- Nefedov, Yu. I., V. G. Chervov, and A. V. Shatokhin. An input device for preprocessing of visual information for a computer. Problemy bioniki, Khar'kov, no. 10, 1973, 125-129.
- Nefedov, Yu. I., R. T. Petrushko, and A. V. Shatokhin. Accuracy of TV systems in electronic scanning techniques. Problemy bioniki, Khar'kov, no. 10, 1973, 130-135.
- Neymark, G. S., and L. P. Krayzmer. Modelling of a pattern recognition process by means of a formal neuron network. Problemy bioniki, Moscow, Nauka, 1973, 276-279.
- Nikolau, E., and K. Balaseanu. Oscillatory phenomena in endocrine and neuroendocrine systems. Problemy bioniki, Moscow, Nauka, 1973, 310-315.
- Pershin, S. V. Hydrobionic characteristics of the nonstationary harmonic locomotion of fishes and dolphins, analyzed in terms of submerged bodies of variable forms. Problemy bioniki, Moscow, Nauka, 1973, 464-474.
- Petrovskaya, Ye. D., G. I. Rozhkova, V. S. Tokareva and V. S. Ekin. Processing of sound signals in the insect nervous system. Problemy bioniki, Moscow, Nauka, 1973, 98-103.
- Pinsker, I. Sh., and V. V. Shakin. Recognition of certain visual and auditory patterns by the method of superposed lines. Problemy bioniki, Moscow, Nauka, 1973, 23-29.

Podshibyakin, A. K., I. D. Zosimovich, V. I. Kolesnik, V. P. Kolodchenko, R. V. Smirnov, T. G. Uzhva, L. V. Tsipin and V. I. Shakhova. Certain conditions for predicting a decline in operating reliability of man-machine systems from data on heliogeophysical disturbances. Problemy bioniki, Moscow, Nauka, 1973, 205-210.

Pommereyt, M. The problem of sequencing in information processing in neural networks with random couplings. Problemy bioniki, Moscow, Nauka, 1973, 239-242.

Pospelov, D. A. The theory of self-adaptive gyromatic structures in problem solving. Problemy bioniki, Moscow, Nauka, 1973, 397-402.

Potapov, V. I. Reliability of formal neuron networks and the problem of their design and construction. Problemy bioniki, Moscow, Nauka, 1973, 220-229.

Potapov, V. I., and M. F. Dotsenko. Neuron-like elements and their role in the functioning of restorative organs. Problemy bioniki, Khar'kov, no. 10, 1973, 38-49.

Potapov, V. I., and P. V. Mirenkov. Formal neuron systems operating by magnetic current distribution switches; structural complexity of such systems and ways of their technological development. Problemy bioniki, Khar'kov, no. 10, 1973, 3-15.

Protasov, V. R., and V. M. Krumin'. An analysis of electrical discharges in Raja clavata and Uranoscopus scaber and their comparison with fishes. Problemy bioniki, Moscow, Nauka, 1973, 182-187.

Pryanitskiy, A. M. General aspects of pattern recognition learning. Problemy bioniki, Khar'kov, no. 10, 1973, 113-120.

Pryanitskiy, A. M., and I. V. Viten'ko. Finite automata for pattern recognition. Problemy bioniki, Khar'kov, no. 10, 1973, 93-99.

Pryakhin, I. M. Bionic studies of the functioning of animal extremity links under repeated alternating loads. Problemy bioniki, Moscow, Nauka, 1973, 503-506.

Putyatin, Ye. P. Theoretical premises for the normalization of images in the field of vision. Problemy bioniki, Khar'kov, no. 10, 1973, 82-89.

Putyatin, Ye. P. and V. Ya. Serdyuchenko. A mathematical model for defining the limits of an optical image in human vision. Problemy bioniki, Khar'kov, no. 10, 1973, 74-82.

Rokhtla, M. A model of a pitch analyzer. Problemy bioniki, Moscow, Nauka, 1973, 69-76.

Sekey, D. Modelling of cerebrospinal nerve mechanisms responsible for the regulation and coordination of extremity movements. Problemy bioniki, Moscow, Nauka, 1973, 333-340.

Shabanov-Kushnarenko, Yu. P. Mathematical modelling of certain functions of human vision. Problemy bioniki, Moscow, Nauka, 1973, 39-45.

Shabanov-Kushnarenko, Yu. P., I. V. Shul'gin and B. K. Lopatchenko. Modelling of metric properties of the human field of vision. Problemy bioniki, Khar'kov, no. 10, 1973, 58-66.

Shapiro, S. I., and A. I. Shapiro. A mathematical model of the process of concept formation in the human brain and its actualization. Problemy bioniki, Khar'kov, no. 10, 1973, 26-33.

Shneyder, A. Yu., Ye. A. Shirokova, L. S. Solov'yev, A. V. Antonov, V. S. Golovin and Ye. M. Volkinshteyn. Vibrational irritations functioning as feedback signals in "man-machine" systems. Problemy bioniki, Moscow, Nauka, 1973, 59-65.

Simkin, G. N., N. D. Patlyakevich and Yu. P. Dobrachev. Evaluation of echolocating systems in horseshoe bats (Rhinolophidae family). Problemy bioniki, Moscow, Nauka, 1973, 146-154.

Sokolov, A. S. An experiment in comparative muscle morphology of the locomotion organs of pinnipeds. Problemy bioniki, Moscow, Nauka, 1973, 483-488.

Sokolov, V. Ye., I. G. Bulina and V. A. Rodionov. Study of the mechanism of interaction between the dolphin epidermis and the flow boundary layer. Problemy bioniki, Moscow, Nauka, 1973, 475-478.

Solodovnik, F. A., and L. M. Vorob'yev. Effect of Coriolis acceleration on a cosmonaut's vestibular apparatus; modelling of the acceleration under laboratory conditions. Problemy bioniki, Moscow, Nauka, 1973, 53-58.

Sotskov, B. S. Current trends in bionics. Problemy bioniki, Moscow, Nauka, 1973, 3-6.

Stosman, I. M. Space sensitivity properties of the bat auditory system, analyzed from electric response thresholds of the posterior portion of the corpora quadrigemina. Problemy bioniki, Moscow, Nauka, 1973, 119-122.

Subbota, A. G. Certain adaptive mechanisms in an animal organism exposed to extreme conditions. Problemy bioniki, Moscow, Nauka, 1973, 414-419.

Tishchenko, V. V. The problem of determining the accuracy and informative capacity of an electron model functioning as a human sensory system. Problemy bioniki, Khar'kov, no. 10, 1973, 109-113.

Trincher, K. S. The physical mechanism of active heat release from living matter; the thermodynamic principles of ontogeny. Problemy bioniki, Moscow, Nauka, 1973, 439-444.

Vagin, V. N., and V. K. Puchin'yan. Investigations into cooperative decision-making in the prisoner's dilemma game. Problemy bioniki, Moscow, Nauka, 1973, 361-366.

Vagin, V. N., L. Ye. Rudel'son and A. R. Eyvazov. Investigations into the behaviour of certain types of random automata in solving displacement problems. Problemy bioniki, Moscow, Nauka, 1973, 389-393.

Vasil'yev, A. G. Responses of individual neurons of the posterior part of bat corpora quadrigemina to ultrasound stimuli of different frequencies and intensities. Problemy bioniki, Moscow, Nauka, 1973, 324-333.

Vnukov, V. A., and R. A. Gurevich. The problem of selecting a physical model for the system ensuring the maintenance of equilibrium posture in man. Problemy bioniki, Khar'kov, no. 10, 1973, 33-38.

Vnukov, V. A., and Yu. P. Shabanov-Kushnarenko. The dynamics of a system for maintaining the equilibrium posture in man. Problemy bioniki, Khar'kov, no. 10, 1973, 99-104.

Voronkova, L. V. Synthesis of formal neurons with minimum-size and minimum-weight fibres, operating on magnetic current-distribution switches. Problemy bioniki, Khar'kov, no. 10, 1973, 15-22.

Yakubovich, V. A. On the brain adaptive system organization with a single-step purpose. Problemy bioniki, Moscow, Nauka, 1973, 355-360.

Yeremin, G. S. A new device and methodology for testing hearing acuity. Problemy bioniki, Khar'kov, no. 10, 1973, 104-109.

Zaslavskiy, S. Ya. On one class of decision-making systems [in medical diagnostics]. Problemy bioniki, Moscow, Nauka, 1973, 379-388.

Zenkin, G. M., and I. N. Pigarev. Dectector systems in the pike retina. Problemy bioniki, Moscow, Nauka, 1973, 321-324.

7. Miscellaneous Interest

A. Recent Selections

Afonin, D. G., A. I. Kostiyenko, Yu. A. Pirogov, and S. I. Ryshkov. Interaction of an electron beam with spatial fields of periodic structure harmonics, excited by quasi-plane wave from an external source. VMU, no. 3, 1973, 375-376.

Askar'yan, G. A., and V. A. Pogosyan. Waves and forces in a homogeneous medium, whose properties change with time. ZhETF, v. 65, no. 1, 1973, 117-122.

Ballisticheskaya raketa na tverdom topliva. (Solid-fuel ballistic missiles). Moskva, Izd-vo voyenizdat, 1972, 511 p. (RBL, 1/73, no. 672)

Budker, G. I., V. V. Mirnov, and D. D. Ryutov. Gas dynamics of a dense plasma in an undulating magnetic field. IN: Sbornik. Probl. teorii plazmy. Kiyev, 1972, 145-151. (RZhMekh, 7/73, no. 7B114).

Chudakov, V. I., and A. M. Shalygin. Some results of the radar investigation of a cover glacier. IN: Trudy. Sovetskaya antarkticheskaya ekspeditsiya, no. 59, 1973, 147-152.

Derevyanko, V. A., A. L. Rudnitskiy, and V. S. Sokolov. Interaction of plasma flow behind a shock wave with a lateral magnetic field. IN: Sbornik. Aerofiz. issledovaniya. Novosibirsk, 1972, p. 78. (RZhMekh, 6/73, no. 6B11)

Fedotov, N. G., O. M. Sarkisov, and V. I. Vedeneyev. Determining probabilities of heterogeneous and homogeneous deactivation of deuterium molecules ($v = 1$). IN: Sbornik. Gorennya i vzryv. Moskva, Izd-vo Nauka, 1972, 654-657.

Gindilis, L. M. Kosmicheskiye tsivilizatsii. (Problemy kontakta s vnezemnym pazumom). (Cosmic civilizations. Problems of contact with extraterrestrial intelligence). Moskva, Izd-vo Znaniye, 1973, 64 p. (KL, 27/73, no. 21047).

Glushkov, V. M. EVM i ekonomika. (Electronic computer and economics). IN: Sotsialisticheskaya Industriya, July 8, 1973, p. 4.

Il'inskaya, N. Plazma v lovushke. (Plasma in a trap). IN: Sotsialisticheskay industriya, May 18, 1973, p. 4.

Izmailov, A. N., and V. I. Shevchenko. Stimulated scattering of a monochromatic plasma wave. Nucl. fusion, v. 12, no. 6, 1972, 637-642. (RZhF, 5/73, no. 5G175)

Kalmykov, A. A., L. V. Leskov, and M. I. Pergament. Pulsed plasma accelerator. IN: Sbornik. Plazmen. uskoriteli. Moskva, Izd-vo Mashinostroyeniye, 1973, 183-191. (RZhMekh, 7/73, no. 7B95)

Kamayev, V. D. Sovremennaya nauchno-tekhnicheskaya revolyutsiya: ekonomicheskiye formy i zakonomernosti. (The modern revolution in science and technology: economic forms and patterns). Moskva, Izd-vo Mysl', 1972, 261 p. (RBL, 3/73, no. 801)

Kapralova, G. A., Ye. M. Margolina, and A. M. Chaykin. Rate constants of some elementary reaction stages of fluorine with hydrogen. IN: Sbornik. Goreniye i vzryv. Moskva, Izd-vo Nauka, 1972, 634-637.

- Knorre, V. G., and N. K. Mamina. Investigating high-temperature interaction of carbon with oxygen in a shock tube. IN: Sbornik, Goreniye i vzryv. Moskva, Izd-vo Nauka, 1972, 668-671.
- Kogan, Ye. Ya., and O. I. Fisun. Nonlinear stability of ionization waves. UFZh, no. 7, 1973, 1104-1108.
- Kolosov, Yu. A., and A. P. Kurochkin. Optical modelling of the radiation pattern of correlation antennas. RiE, no. 7, 1973, 1347-1352.
- Kopvillem, U. Kh. Generatsiya i priyem γ -kvantov i γ -gravitonov pri pomoshchi lazerov. (Generation and application of γ -quanta and γ -gravitons by means of lasers.) Kazan. fiz.-tekhn. in-t, AN SSSR, Kazan, 1972, 27 p. (RZhF. 5/73, no. 5B167)
- Korolyuk, A. P., V. I. Khotkevich, M. A. Obolenskiy, and V. I. Beletskiy. Giant quantum oscillations of sonic second harmonics in bismuth. ZhETF P, v. 18, no. 1, 1973, 32-35.
- Kukushkina, R. S., M. I. Pudovkin, and G. V. Starkov. Radio wave propagation through the polar cap. IN: Sbornik. Geomagnit. i ionosfer. vozmushcheniya v vysokikh shipotakh. Leningrad, Izd-vo Nauka, 1973, 125-131. (RZhGeofiz, 7/73, no. 7A203)
- Los', V. F. The theory of stimulated generation in plasmons. FTT, no. 7, 1973, 2001-2007.
- Lun'kina, A. A., and D. K. Sattarov. Noise in fiber-optic elements. OiS, v. 35, no. 1, 1973, 148-155.
- Podgornyy, I. M. Using plasma accelerators in cosmic investigations. IN: Sbornik. Plazmen. uskoriteli. Moskva, Izd-vo Mashinostroyeniye, 1973, 41-47. (RZhMekh, 6/73, no. 6B88)

Pushkin, V. N. Kvantovaya telepatiya? (Quantum telepathy?) IN: Sotsialisticheskaya Industriya. July 6, 1973, p. 4.

Selivanov, A. S., V. A. Timokhin, and V. I. Seregin. Television system for controlling Lunokhod maneuvers. TKiT, no. 7, 1973, 8-12.

Starobinskiy, A. A., and S. M. Churilov. Amplification of electromagnetic and gravitational waves during scattering in a revolving "black hole". ZhETF, 65, no. 1, 1973, 3-11.

The anomalous angular distribution of electrons backscattered from a target covered with a hydrocarbon polymer layer. Czech. J. phys., no. 6, 1973, 681-682.

Yakhlakov, Yu. V. A method for experimental determination of the characteristic Lewis number for a dissociated gas. Author's certificate, USSR, no. 342099, published July 21, 1972. (RZhMekh, 6/73, no. 6B860 P)

Yampol'skiy, Yu. P., Yu. V. Maksimov, S. I. Korochuk, and K. P. Lavrovskiy. Using deuterated compounds for investigating kinetics and mechanism of the thermal transformations of hydrocarbons. IN: Sbornik. Gorenije i vzryv. Moskva, Izd-vo Nauka, 1972, 650-653.

Zaslonko, I. S., S. M. Kogarko, Ye. V. Mozhukhin, and A. I. Dornin. Activation fluctuation in exothermic decay reactions. IN: Sbornik. Gorenije i vzryv, Moskva, Izd-vo Nauka, 1972, 685-689.

Zhovanik, A. Voyennyye sputniki svyazi (Military communication satellites). IN: Krasnaya zvezda, June 14, 1973, p. 3.

Zhuk, N. M., et al. Zashchita naseleniya ot khimicheskogo oruzhiya. (Protecting the population against chemical weapons). Moskva, Izd-vo Meditsina, 1972, 40 p. (RBL, 3/73, no. 657).

Zlatin, N. A., A. P. Krasil'shchikov, and G. I. Mishin. Aeroballistic and impact ranges and their use in experimental research. Izd-vo Nauka. (NK, 28/73, p. 16, to be published early 1974)

Zyuryukin, Yu. A., V. V. Stefko, and V. S. Khitrin. The theory of acousto-electric generation of e-m oscillation in piezosemiconductors. RiE, no. 7, 1973, 1459-1467.

SOURCE ABBREVIATIONS

AiT	-	Avtomatika i telemekhanika
APP	-	Acta physica polonica
DAN ArmSSR	-	Akademiya nauk Armyanskoy SSR. Doklady
DAN AzSSR	-	Akademiya nauk Azerbaydzhanskoy SSR. Doklady
DAN BSSR	-	Akademiya nauk Belorusskoy SSR. Doklady
DAN SSSR	-	Akademiya nauk SSSR. Doklady
DAN TadSSR	-	Akademiya nauk Tadzhikskoy SSR. Doklady
DAN UkrSSR	-	Akademiya nauk Ukrainskoy SSR. Dopovidi
DAN UzbSSR	-	Akademiya nauk Uzbekskoy SSR. Doklady
DBAN	-	Bulgarska akademiya na naukite. Doklady
EOM	-	Elektronnaya obrabotka materialov
FAiO	-	Akademiya nauk SSSR. Izvestiya. Fizika atmosfera i okeana
FGIV	-	Fizika goreniya i vzryva
FiKhOM	-	Fizika i khimiya obrabotka materialov
F-KhMM	-	Fiziko-khimicheskaya mekhanika materialov
FMiM	-	Fizika metallov i metallovedeniye
FTP	-	Fizika i tekhnika poluprovodnikov
FTT	-	Fizika tverdogo tela
FZh	-	Fiziologicheskiy zhurnal
GiA	-	Geomagnetizm i aeronomiya
GiK	-	Geodeziya i kartografiya
IAN Arm	-	Akademiya nauk Armyanskoy SSR. Izvestiya. Fizika
IAN Az	-	Akademiya nauk Azerbaydzhanskoy SSR. Izvestiya. Seriya fiziko-tekhnicheskikh i matematicheskikh nauk

IAN B	-	Akademiya nauk Belorusskoy SSR. Izvestiya. Seriya fiziko-matematicheskikh nauk
IAN Biol	-	Akademiya nauk SSSR. Izvestiya. Seriya biologicheskaya
IAN Energ	-	Akademiya nauk SSSR. Izvestiya. Energetika i transport
IAN Est	-	Akademiya nauk Estonskoy SSR. Izvestiya. Fizika matematika
IAN Fiz	-	Akademiya nauk SSSR. Izvestiya. Seriya fizicheskaya
IAN Fizika zemli	-	Akademiya nauk SSSR. Izvestiya. Fizika zemli
IAN Kh	-	Akademiya nauk SSSR. Izvestiya. Seriya khimicheskaya
IAN Lat	-	Akademiya nauk Latviyskoy SSR. Izvestiya
IAN Met	-	Akademiya nauk SSSR. Izvestiya. Metally
IAN Mold	-	Akademiya nauk Moldavskoy SSR. Izvestiya. Seriya fiziko-tehnicheskikh i matematicheskikh nauk
IAN SO SSSR	-	Akademiya nauk SSSR. Sibirskoye otdeleniye. Izvestiya
IAN Tadzh	-	Akademiya nauk Tadzhikskoy SSR. Izvestiya. Otdeleniye fiziko-matematicheskikh i geologicheskikh nauk
IAN TK	-	Akademiya nauk SSSR. Izvestiya. Tekhnicheskaya kibernetika
IAN Turk	-	Akademiya nauk Turkmenskoy SSR. Izvestiya. Seriya fiziko-tehnicheskikh, khimicheskikh, i geologicheskikh nauk
IAN Uzb	-	Akademiya nauk Uzbekskoy SSR. Izvestiya. Seriya fiziko-matematicheskikh nauk
IBAN	-	Bulgarska akademiya na naukite. Fizicheski institut. Izvestiya na fizicheskaya institut s ANEB
I-FZh	-	Inzhenerno-fizicheskiy zhurnal

IiR	-	Izobretatel' i ratsionalizator
ILEI	-	Leningradskiy elektrotekhnicheskiy institut. Izvestiya
IT	-	Izmeritel'naya tekhnika
IVUZ Avia	-	Izvestiya vysshikh uchebnykh zavedeniy. Aviatsionnaya tekhnika
IVUZ Cher	-	Izvestiya vysshikh uchebnykh zavedeniy. Chernaya metallurgiya
IVUZ Energ	-	Izvestiya vysshikh uchebnykh zavedeniy. Energetika
IVUZ Fiz	-	Izvestiya vysshikh uchebnykh zavedeniy. Fizika
IVUZ Geod	-	Izvestiya vysshikh uchebnykh zavedeniy. Geodeziya i aerofotos"yemka
IVUZ Geol	-	Izvestiya vysshikh uchebnykh zavedeniy. Geologiya i razvedka
IVUZ Gorn	-	Izvestiya vysshikh uchebnykh zavedeniy. Gornyy zhurnal
IVUZ Mash	-	Izvestiya vysshikh uchebnykh zavedeniy. Mashinostroyeniye
IVUZ Priboro	-	Izvestiya vysshikh uchebnykh zavedeniy. Priborostroyeniye
IVUZ Radioelektr	-	Izvestiya vysshikh uchebnykh zavedeniy. Radioelektronika
IVUZ Radiofiz	-	Izvestiya vysshikh uchebnykh zavedeniy. Radiofizika
IVUZ Stroi	-	Izvestiya vysshikh uchebnykh zavedeniy. Stroitel'stvo i arkhitektura
KhVE	-	Khimiya vysokikh energiy
KiK	-	Kinetika i kataliz
KL	-	Knizhnaya letopis'
Kristall	-	Kristallografiya
KSpF	-	Kratkiye soobshcheniya po fizike

LZhS	-	Letopis' zhurnal'nykh statey
MiTOM	-	Metallovedeniye i termicheskaya obrabotka materialov
MP	-	Mekhanika polimerov
MTT	-	Akademiya nauk SSSR. Izvestiya. Mekhanika tverdogo tela
MZhiG	-	Akademiya nauk SSSR. Izvestiya. Mekhanika zhidkosti i gaza
NK	-	Novyye knigi
NM	-	Akademiya nauk SSSR. Izvestiya. Neorganicheskiye materialy
NTO SSSR	-	Nauchno-tekhnicheskiye obshchestva SSSR
OiS	-	Optika i spektroskopiya
OMP	-	Optiko-mekhanicheskaya promyshlennost'
Otkr izobr	-	Otkrytiya, izobreteniya, promyshlennyye obraztsy, tovarnyye znaki
PF	-	Postepy fizyki
Phys abs	-	Physics abstracts
PM	-	Prikladnaya mekhanika
PMM	-	Prikladnaya matematika i mekhanika
PSS	-	Physica status solidi
PSU	-	Pribory i sistemy upravleniya
PTE	-	Pribory i tekhnika eksperimenta
Radiotekh	-	Radiotekhnika
RiE	-	Radiotekhnika i elektronika
RZhAvtom	-	Referativnyy zhurnal. Avtomatika, telemekhanika i vychislitel'naya tekhnika
RZhElektr	-	Referativnyy zhurnal. Elektronika i yeye primeneniye

RZhF	-	Referativnyy zhurnal. Fizika
RZhFoto	-	Referativnyy zhurnal. Fotokhitekhnika
RZhGeod	-	Referativnyy zhurnal. Geodeziya i aerostanovka
RZhGeofiz	-	Referativnyy zhurnal. Geofizika
RZhInf	-	Referativnyy zhurnal. Informatics
RZhKh	-	Referativnyy zhurnal. Khimiya
RZhMekh	-	Referativnyy zhurnal. Mekhanika
RZhMetrolog	-	Referativnyy zhurnal. Metrologiya i izmeritel'naya tekhnika
RZhRadiot	-	Referativnyy zhurnal. Radiotekhnika
SovSciRev	-	Soviet science review
TiEKh	-	Teoreticheskaya i eksperimental'naya khimiya
TKiT	-	Tekhnika kino i televideniya
TMF	-	Teoreticheskaya i matematicheskaya fizika
TVT	-	Teplofizika vysokikh temperatur
UFN	-	Uspekhi fizicheskikh nauk
UFZh	-	Ukrainskiy fizicheskii zhurnal
UMS	-	Ustalost' metallov i splavov
UNF	-	Uspekhi nauchnoy fotografii
VAN	-	Akademiya nauk SSSR. Vestnik
VAN BSSR	-	Akademiya nauk Belorusskoy SSR. Vestnik
VAN KazSSR	-	Akademiya nauk Kazakhskoy SSR. Vestnik
VBU	-	Belorusskiy universitet. Vestnik
VNDKh SSSR	-	VNDKh SSSR. Informatsionnyy byulleten'
VLU	-	Leningradskiy universitet. Vestnik. Fizika, khimiya
VMU	-	Moskovskiy universitet. Vestnik. Seriya fizika, astronomiya

ZhETF	-	Zhurnal eksperimental'noy i teoreticheskoy fiziki
ZhETF P	-	Pis'ma v Zhurnal eksperimental'noy i teoreticheskoy fiziki
ZhFKh	-	Zhurnal fizicheskoy khimii
ZhNIPFiK	-	Zhurnal nauchnoy i prikladnoy fotografii i kinematografii
ZhNKh	-	Zhurnal neorganicheskoy khimii
ZhPK	-	Zhurnal prikladnoy khimii
ZhPMTF	-	Zhurnal prikladnoy mekhaniki i tekhnicheskoy fiziki
ZhPS	-	Zhurnal prikladnoy spektroskopii
ZhTF	-	Zhurnal tekhnicheskoy fiziki
ZhVMMF	-	Zhurnal vychislitel'noy matematiki i matematicheskoy fiziki
ZL	-	Zavodskaya laboratoriya